SM/85/72

CONTAINS CONFIDENTIAL INFORMATION

March 11, 1985

To: Members of the Executive Board

From: The Secretary

Subject: World Economic Outlook: Supplementary Note 3 - Non-Oil Primary Commodity Price Developments and Prospects

The attached note on non-oil primary commodity price developments and prospects provides background material for the Executive Board discussion on Monday and Wednesday, April 1 and 3, 1985 of the World Economic Outlook.

If Executive Directors have technical or factual questions relating to this paper prior to the Board discussion, they should contact Mr. Kaibni (ext. 7721).

Att: (1)

Other Distribution:
Department Heads

CONTAINS CONFIDENTIAL INFORMATION

INTERNATIONAL MONETARY FUND

World Economic Outlook: Supplementary Note 3

Non-Oil Primary Commodity Price Developments and Prospects

Prepared by the Research Department

(In consultation with other Departments)

Approved by Wm. C. Hood

March 11, 1985

This note reviews recent developments relating to prices of non-oil primary commodities 1/ and assesses the near- and medium-term outlook. The first section describes price movements in 1984 and assesses the main determinants of those movements. Special attention is given to the behavior of the prices of metals which have declined in spite of increased economic activity in industrial countries. In the second section, the influence of changes in the U.S. dollar exchange rate on commodity prices (both in nominal and real terms) is analyzed. The third section examines the prospects for commodity prices through 1990. The final section discusses the implications of movements in commodity prices for export earnings of non-oil developing countries and for the use of the Fund's special facilities.

Commodity prices in 1984

Following an increase of 8 percent in 1983, the overall index of commodity prices in U.S. dollar terms rose by 2 percent in 1984 (Table 1 and Chart 1). The index in 1984 was still 11 percent below the average for 1979-81. In SDR terms, however, the index in 1984 was 6 percent higher than in 1983 and 9 percent higher than during 1979-81, underscoring the impact of the appreciation of the U.S. currency on dollar prices of primary commodities (see following section).

The direction of the movement in the overall index changed during 1984. The index increased in the first quarter (by 2 percent both in U.S. dollar terms and SDR terms) and showed little change in the second quarter. In the third quarter, however, the index fell sharply (by 7 percent in U.S. dollar terms and by 5 percent in SDR terms) and sustained a further decline in the final quarter. As a result, the index in the final quarter of 1984 was below its level in the final quarter of 1983 in terms of both the U.S. dollar (8 percent) and the SDR (3 percent).

1/ In the remainder of this note, non-oil primary commodities are referred to as primary commodities or commodities.

Table 1. Indices of Non-Oil Primary Commodity Prices 1/

(1980 = 100)

Year	In U.S. Dollar Terms					In SDR Terms	Deflated By Price of Manufactures 2/				
	All	Food	Beverages	Agricultural raw materials	Metals	All	All	Food	Beverages	Agricultural raw materials	Metals
						(Index)					
1970	35	32	31	32	46	45	102	94	91	93	134
1971	33	33	29	31	40	43	91	90	79	86	109
1972	37	37	32	41	40	45	95	95	80	104	100
1973	58	58	39	74	58	63	125	126	85	160	126
1974	74	92	46	71	73	80	132	164	83	129	131
1975	60	71	45	57	59	64	94	111	70	90	92
1976	68	60	86	71	62	77	107	94	133	111	97
1977	83	59	148	73	67	92	120	85	215	106	97
1978	79	68	108	79	71	82	100	86	136	100	89
1979	92	77	114	96	92	93	102	85	126	107	102
1980	100	100	100	100	100	100	100	100	100	100	100
1981	85	86	78	90	83	93	90	92	82	96	89
1982	74	68	80	78	75	88	81	74	86	85	81
1983	80	75	86	85	78	98	91	85	97	97	88
1984	82	73	98	89	72	104	96	86	115	104	85
1983											
Q1	74	66	81	78	76	89	82	73	89	86	84
Q2	79	74	82	84	80	96	89	83	92	95	90
Q3	83	80	84	89	79	102	95	92	97	102	91
Q4	84	78	95	90	76	104	97	90	110	105	88
1984											
Q1	86	78	101	93	76	106	98	89	116	107	87
Q2	86	79	102	91	75	107	98	91	117	105	86
Q3	80	71	96	87	70	103	95	85	114	103	84
Q4	77	66	95	84	71	101	92	79	112	100	84
						(Percentage change from preceding period)					
1970	3	7	11	-9	5	2	-2	--	7	-13	--
1971	-6	3	-6	-3	-13	-4	-11	-4	-13	-8	-19
1972	12	12	10	32	--	5	4	6	1	21	-8
1973	57	57	22	80	45	40	32	33	6	54	26
1974	28	59	18	-4	26	27	6	30	-2	-19	4
1975	-19	-23	-2	-20	-19	-20	-29	-32	-16	-30	-30
1976	13	-15	91	25	5	20	14	-15	90	23	5
1977	22	-2	72	3	8	19	12	-10	62	-5	--
1978	-5	15	-27	8	6	-11	-17	1	-37	-6	-8
1979	16	13	6	22	30	13	2	-1	-7	7	15
1980	9	30	-12	4	9	8	-2	18	-21	-7	-2
1981	-15	-14	-22	-10	-17	-7	-10	-8	-18	-4	-11
1982	-13	-21	3	-13	-10	-5	-10	-20	5	-11	-9
1983	8	10	8	9	4	11	12	15	13	14	9
1984	2	-3	14	5	-6	6	5	1	19	7	-3
1983											
Q1	3	5	-1	5	6	3	3	3	-3	4	4
Q2	7	12	1	8	5	8	9	14	3	10	7
Q3	5	8	2	6	-1	6	7	11	5	7	1
Q4	1	-3	13	1	-4	2	2	-2	13	3	-3
1984											
Q1	2	--	6	3	--	2	1	-1	5	2	-1
Q2	--	1	1	-2	-1	1	--	2	1	-2	-1
Q3	-7	-10	-6	-4	-7	-4	-3	-7	-3	-2	-2
Q4	-4	-7	-1	-3	1	-2	-3	-7	-2	-3	--

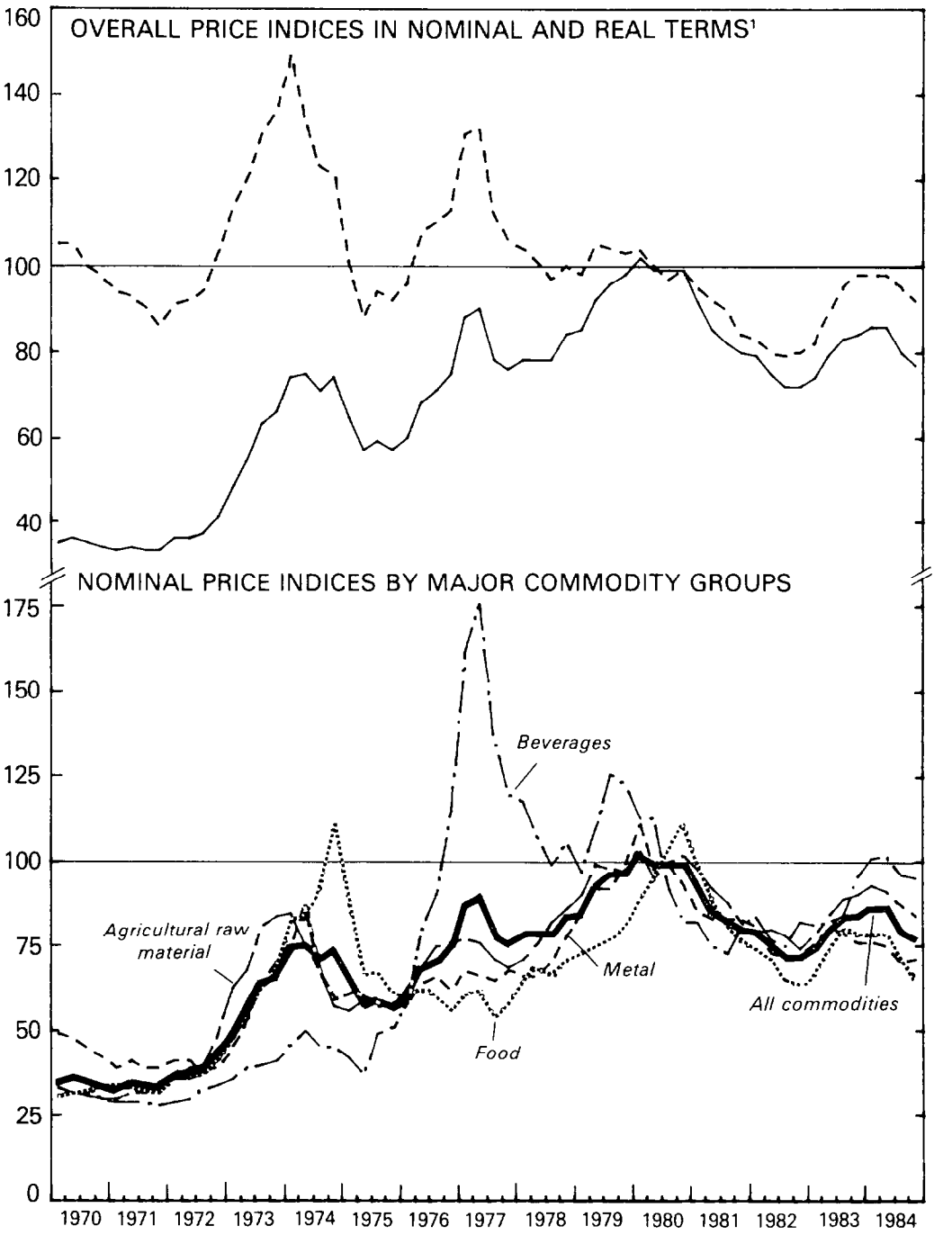
1/ Weights are based on 1968-70 average export earnings of primary producing countries; the indices are rebased on 1980.

2/ Based on the UN index of the unit values of manufactures exported by developed countries.

CHART 1

NON-OIL COMMODITY PRICE INDICES, 1970-84

(1980 = 100)



[1]Nominal prices are in terms of U.S. dollars; real prices are derived by deflating nominal prices by the UN index of unit values of manufactures exported by developed countries.

The pattern of movement of the dollar price indices for three of the four major commodity groups during 1983 and 1984 was similar to that for the overall index. The price index for beverages reached its peak in the second quarter of 1984, while the price index for agricultural raw materials reached its peak one quarter earlier. Although the price index for food reached a peak in the third quarter of 1983, it remained relatively stable for the next three quarters, before declining substantially in the final two quarters of 1984. The exception was the price index for metals which reached its peak as early as the second quarter of 1983 and declined steadily each quarter thereafter. Thus, prices for metals experienced both the shortest and smallest recovery, with the index for metals increasing by only 11 percent from the recession trough in the final quarter of 1982 to the second quarter of 1983, before falling for six consecutive quarters by a cumulative 15 percent. As a consequence, in the final quarter of 1984 metals prices in terms of U.S. dollars were 5 percent below the level at the trough of the 1981-82 recession two years earlier.

Commodity prices in real terms, measured as the overall index of commodity prices deflated by the price index of manufactured goods exported by industrial countries, rose by 5 percent in 1984, 3 percentage points more than the increase in nominal prices. In 1983, real commodity prices rose by 12 percent, also considerably more than the increase in nominal prices. The pattern of movement in real prices from quarter to quarter in both years was similar to that for nominal prices.

The movement of commodity prices has been influenced by both demand and supply factors. The levels of economic activity and rates of inflation in industrial countries have been important determinants of commodity prices. In recent years the appreciation of the exchange rates of the U.S. dollar vis-a-vis other currencies has influenced the level of the dollar prices of commodities. Supply shocks, primarily caused by weather, and changes in national and international policies affecting levels of commodity production have played an important role in price determination, particularly for agricultural commodities.

The behavior of commodity prices and the related changes in these underlying factors are summarized in Table 2. Industrial production in major industrial countries (aggregated by GNP weights) is estimated to have increased in 1984 by 8 percent. However, annual data mask a deceleration which is evident when semiannual data are examined; the increase in industrial production slowed from an annualized rate of 11 percent in the last half of 1983 to 8 percent in the first half of 1984 and to 5 percent in the last half of 1984. This deceleration occurred primarily in the United States, while the pace of economic recovery of European countries remained much slower than in the United States in both 1983 and 1984.

Table 2. Changes in Non-Oil Commodity Prices and Major Underlying Factors, 1981-1984

(Annual percentage change)

	1981	1982	1983	1984
Commodity prices in U.S. dollar terms				
All commodities	-15	-13	8	2
Food	-14	-21	10	-3
Beverages	-22	3	8	14
Agricultural raw materials	-10	-13	9	5
Metals	-17	-10	4	-8
Underlying factors				
Industrial production 1/	--	-5	4	8
Domestic price levels 2/	9	6	4	4
SDR/U.S. dollar rate 3/	10	7	3	4
World production of primary commodities 4/	7	-5	--	5
Food	12	-2	-4	8
Beverages	10	-12	5	5
Agricultural raw materials	3	-1	2	8
Metals	1	-6	--	--

1/ Index of industrial production in seven major industrial countries aggregated using 1982 GNP weights.

2/ Index of consumer prices in five major industrial countries aggregated using 1982 GNP weights.

3/ (+) = appreciation of the dollar.

4/ Using same weights as in commodity price index, adjusted to exclude commodities for which no production data are available. The data on changes in production of food and beverages refer to changes in production for the crop years beginning in the calendar years indicated at the top of the table. For example, the annual change of 5 percent in food production for 1984 indicates the rate of change in food production between the 1983/84 and the 1984/85 crop years. For the group of agricultural raw materials, similar data are used for cotton, but calendar year data are used for others. For metals, calendar year data are used throughout.

The relatively slow economic recovery of the European countries during 1983-84 is worthy of special attention, since these countries account for about half of world imports of primary commodities. In Table 3, the fluctuation of commodity prices during the recent two cycles (1972-77 and 1978-83) is compared with the fluctuation of two alternative indices of aggregate industrial production of major industrial countries, weighted respectively by GNP shares and by commodity import shares. When an index of industrial production is aggregated using weights corresponding to commodity import shares, thus giving European countries larger weight than by the customary GNP weights, the economic recovery of industrial countries during 1983-84 appears significantly less than when GNP weights are used and also significantly slower than the recovery during 1976-77. During the 1976-77 recovery there was little discrepancy between the two weighting schemes because the industrial countries participated more equally in the recovery. The slower economic recovery in industrial countries during 1983-84, when measured by commodity import shares, may help to explain the relatively slow recovery in commodity prices during the same period.

Inflation in the industrial countries decelerated from 9 percent in 1981 to 6 percent in 1982 and to 4 percent in 1983 and in 1984 (Table 2). In addition, petroleum prices have been under downward pressure over the course of 1984. This environment of rather low inflation in industrial countries in 1983 and 1984 has served to restrain commodity price increases. The U.S. dollar exchange rates vis-a-vis other major currencies remained fairly stable during the first half of 1984, but then appreciated by about 7 percent in the second half. The appreciation of the U.S. dollar in the second half of 1984 was a major factor in the fall in the dollar commodity prices in the same period. 1/ A more detailed analysis of the influence of U.S. dollar exchange rate movements on commodity prices in recent years is contained in the following section.

Supply-side factors exerted a major influence on commodity prices in 1983 and 1984, particularly with respect to agricultural commodities. After declining by 5 percent in 1982, world production of commodities remained low in 1983 (Table 2). In 1983, a number of agricultural commodities (copra, soybeans, soybean meal, and maize) experienced declines in production, while others (groundnut oil, groundnut cake, fishmeal, coffee, and cocoa) having experienced production declines in 1982, remained at low levels. These production shortfalls were caused for the most part by unfavorable weather, although government-sponsored acreage reduction in the United States was also a factor for some commodities. The average price increase in 1983 for commodities whose production declined was about 20 percent, compared with about 5 percent for other agricultural commodities.

1/ In addition, interest rates remained at historically high levels in 1984 and, therefore, continued to exert a depressing influence on user demand for commodity stocks. However, in the absence of a persistent upward or downward trend in real interest rates during 1984, the impact of this factor on commodity prices in 1984 does not appear to have differed appreciably from that in the period 1981-83.

Table 3. Changes in Quarterly Non-Oil Commodity Prices and Industrial Production, 1972-84

Periods of Cycles 1/	1972-77 Price Cycle			1978-83 Price Cycle		
	Increase 1972-74	Decrease 1974-75	Recovery 1976-77	Increase 1978-80	Decrease 1981-82	Recovery 1983-84
Length in quarters	10	6	6	9	8	6
	(Percentage changes)					
Commodities prices in U.S. dollars	131	-26	50	31	-28	17
Industrial production weighted by						
GNP 2/	19	-12	14	11	-9	14
Commodity import shares 2/	19	-12	13	13	-7	9

1/ The periods are defined as in the earlier World Economic Outlook report (1984) as follows: For commodity prices: The 1972-77 cycle. Increase: first quarter 1972 to second quarter 1974; decrease: third quarter 1974 to fourth quarter 1975; recovery: first quarter 1976 to second quarter 1977. The 1978-84 cycle. Increase: fourth quarter 1978 to fourth quarter 1980; decrease: first quarter 1981 to fourth quarter 1982; recovery: first quarter 1983 to second quarter 1984. For industrial production: The 1972-77 cycle. Increase: third quarter 1971 to fourth quarter 1973; decrease: first quarter 1973 to second quarter 1975; recovery: third quarter 1975 to fourth quarter 1976. The 1978-84 cycle. Increase: first quarter 1978 to first quarter 1980; decrease: second quarter 1980 to fourth quarter 1982; recovery: first quarter 1983 to second quarter 1984.

2/ Based on seven major industrial countries.

In 1984, production of virtually all agricultural commodities increased, in part in response to high prices in 1983; particularly large increases were recorded for those commodities which had experienced production shortfalls in 1983. Overall production of commodities rose by over 5 percent in 1984 as favorable weather conditions were experienced in most of the world's major growing areas. Production increases for food and agricultural raw materials (8 percent each) were larger than the increase in output of beverages (5 percent). These supply increases were a major contributing factor to the 15 percent decline in food prices and the 9 percent decline in the prices of agricultural raw materials from the first to the last quarter of 1984. The price declines accelerated in the last two quarters of 1984 when the larger supplies materialized.

Another critical factor underlying the behavior of the overall index of commodity prices in 1983-84 was the behavior of the prices of metals. While it has been demonstrated empirically that the prices of metals to a greater extent than those of food and beverages, are positively correlated with economic activity in the industrial countries, in 1983-84 the metals prices and economic activity have displayed a largely inverse relationship. The metals most responsible for the recent weakness in the price subindex for metals are copper, iron ore, and tin, which together account for about 80 percent of the total weight in the subindex. The price of copper recovered briefly in the first half of 1983 (by 19 percent from the trough in the third quarter of 1982 to the second quarter of 1983), and then declined by a cumulative 23 percent to the last quarter of 1984. The price of iron ore declined steadily throughout 1983-84 by a cumulative 15 percent. The price of tin traced a pattern similar to that of copper, increasing by 12 percent from the trough in the third quarter of 1982 to the second quarter of 1983 before falling by a cumulative 15 percent to the last quarter of 1984. By the fourth quarter of 1984, copper and tin prices were at their lowest levels since 1978, and the price of iron ore was at its lowest since 1979.

Metals prices were influenced by particular developments on the supply side during 1983-84, as well as by structural changes in respect of both supply and demand. The 1983-84 world economic recovery began with a large supply overhang in the form of high levels of metal stocks and low capacity utilization. During 1983, a tendency of producers to reactivate idle capacity prematurely restrained price increases. In 1984, stocks of the major metals declined somewhat as consumption increases were larger than in 1983 and production declined. Capacity utilization rates remained relatively low.

Structural factors both on demand and supply sides also have placed downward pressure on the prices of metals. On the demand side, the intensity in the use of copper, iron ore, and tin by industrial countries (measured by kilograms of metal consumption per dollar of real GNP) has been declining for the last 10 to 15 years, as the share of capital investment expenditures in GNP in industrial countries has declined. The decline in the intensity in the use of metals seems to have accelerated in the early 1980s. This acceleration appears to have been encouraged by

the record high prices for copper, iron ore, and tin in 1979-80, which resulted in the more rapid development and adoption of material-saving technologies and the substitution of other materials for metals.

Material substitution has been the major factor contributing to the decline in the intensity of use of copper, with large inroads having been made by aluminum, plastics, and fiber optics primarily in the electronics, automotive, pipes and tubes, and telecommunications industries. The intensity in the use of iron ore, on the other hand, has declined mainly because of changes in technology in steel production which have resulted in less iron ore required to produce a given amount of steel. The intensity in the use of tin has declined both because of material substitution (primarily by glass and plastics in the packaging industry) and because of tin-saving technologies in the production of tinplate and steel sheets.

On the supply side, structural factors have primarily taken the form of cost reductions, which have been substantial in the production of some metals, notably copper. Cost reductions have occurred either because of a shift in the location of production to areas with a relatively greater comparative advantage (e.g., larger copper production in countries where the grade of ore is very high and production costs low), or because of technological improvements of existing mines. The unit costs of production, however, vary widely, with low-cost producers often able to make a profit even at recent low world prices while high-cost producers must choose between sustaining large operating losses or shutting down.

In 1984, the operations of international commodity agreements influenced the prices for only three commodities: coffee, natural rubber, and tin. Coffee prices in 1984 were at or near the agreed upper limits of the price range and to check the upward movement in prices, export quotas were increased in accordance with decisions of the International Coffee Council under the provisions of the 1983 International Coffee Agreement. The price of natural rubber, after exceeding the upper intervention price of the International Natural Rubber Agreement in early 1984, declined sharply and fell below the lower intervention price in December 1984, triggering purchases by the buffer stock manager in January 1985 in order to support the price. The operations of buffer stock and the export controls under the Sixth International Tin Agreement and the decision to defer liquidation of stocks held over from the Fifth Agreement succeeded in keeping the price of tin from falling below the Agreement's floor price in 1984. By contrast, the stabilization provisions of the 1977 International Sugar Agreement during 1984, as in 1983 and 1982, were not effective in keeping the price of sugar on the free market within the agreed price range; in the second half of 1984 the price of sugar fell to the lowest level since 1971. The Agreement expired at end-December 1984 and was replaced by an agreement without market intervention provisions. Because of insufficient financing, the market intervention mechanism of the International Cocoa Agreement remained inoperative in 1984, despite price declines below the lower intervention price near the end of the year.

Exchange rate changes and commodity prices

The appreciation of the U.S. dollar against other major currencies during the most recent price cycle has raised a number of questions regarding the relationship between exchange rates and commodity prices. First, how do commodity prices expressed in various currencies move in response to exchange rate changes? Second, and possibly a more important question, how does the appreciation of the U.S. dollar affect commodity prices relative to the prices of other goods. Of the various measures of relative or "real" prices that could be devised, three are particularly relevant for analysis of primary commodities: (a) commodity prices relative to the prices of manufactures; (b) commodity prices relative to the domestic prices of exporting countries; and (c) commodity prices relative to the domestic prices of importing countries. The first measure is appropriate for analysis of the external terms of trade of primary exporting countries; the second and third measures are relevant for analysis of the factors that influence production and consumption decisions in exporting and importing countries, respectively. This section reviews commodity price fluctuations during the last two price cycles in terms of alternative measures of nominal and "real" prices; it also summarizes the results of econometric analyses of the relationship between changes in the U.S. dollar exchange rate and commodity prices in both nominal and real terms.

In part A of Table 4, changes in nominal commodity prices are expressed in terms of three measures: the U.S. dollar, a basket of the currencies of exporting countries and a basket of the currencies of the importing countries. 1/ The larger increase in the price of commodities in terms of dollars than in terms of the two currency baskets recorded during the 1972-74 rise in commodity prices reflected the depreciation of the dollar against other currencies during that period. 2/ In subsequent phases of the two price cycles, the dollar prices either declined more or increased less than the prices measured in the two currency baskets, reflecting the appreciation of the dollar throughout the entire period. In particular, the substantial appreciation of the dollar during the 1981-82 world recession resulted in a large decline in the dollar prices, while the currency-basket prices either increased (exporting-country basket) or did not change (importing-country basket). The continued appreciation of the dollar during the 1983-84 recovery led to a significantly slower pace of increase in the dollar prices than in the currency-basket prices of both importing and exporting countries. It is worth noting that in terms of the currency basket of exporting countries, commodity prices increased

1/ The currency baskets for exporting and importing countries reflect the respective shares of individual countries in commodity trade. Domestic price levels of exporting and importing countries are also based on the same shares.

2/ It should be noted that changes in the exchange rates as defined here reflect not only the fluctuation of the U.S. dollar rates against other major currencies but also the changes in the exchange rates of developing countries associated with adjustment policies.

Table 4. Fluctuation of Non-Oil Commodity Prices 1/

Periods of Cycle 2/	1972-77 Price Cycle			1978-84 Price Cycle		
	Increase 1972-74	Decrease 1974-75	Recovery 1976-77	Increase 1978-80	Decrease 1981-82	Recovery 1983-84
Lengths in quarters	10	6	6	9	8	6
			(Percentage changes)			
			(Part A)			
Nominal prices						
1. U.S. dollars	131	-26	50	31	-28	17
2. Currency baskets:						
2.1 Exporting countries	113	-22	58	43	34	388
2.2 Importing countries	104	-22	51	35	0	68
			(Part B)			
Real prices: prices in corresponding rows in Part A deflated by:						
1. Manufactures prices	54	-32	36	2	-19	20
2. Domestic prices of:						
2.1 Exporting countries	56	-32	35	-1	-18	29
2.2 Importing countries	45	-29	34	3	-17	19
			(Part C) 3/			
Exchange rates: between U.S. dollars and currency baskets:						
1. Exporting countries	-8	5	5	9	86	315
2. Importing countries	-12	5	1	4	39	43
			(Part D)			
Deflators						
1. Manufactures prices	51	9	10	27	-11	-1
2. Domestic prices of:						
2.1 Exporting countries	36	14	17	44	65	278
2.2 Importing countries	40	9	13	31	22	41

1/ The non-oil commodity price index in U.S. dollar terms is the Fund's index. The non-oil commodity price indices in currency baskets are derived by converting the subindices in U.S. dollar terms for food, beverages, agricultural raw materials, and metals to currency baskets, reflecting, respectively, export and import shares of those commodity groups and aggregating these subindices. The manufactures price index is the United Nations index of the unit values of manufactures exported by developed countries. The domestic prices used to deflate nominal commodity prices are derived by aggregating the wholesale price indices of individual exporting and importing countries on the basis of the export and import shares as used to derive the currency baskets. In deriving both the currency baskets and aggregate domestic price indices for exporting and importing countries, the countries whose shares in world exports or imports are less than 2 percent for all subgroups of commodities are deleted from the sample. The sample of exporting countries consists of 13 industrial countries and 28 developing countries; the sample of importing countries consists of 12 industrial countries and 12 developing countries.

2/ The periods of the two cycles are defined as in the earlier World Economic Outlook report (1984) as follows: the 1972-77 price cycle: increase: first quarter 1972 to second quarter 1974, decrease: third quarter 1974 to fourth quarter 1975, recovery: first quarter 1976 to second quarter 1977; the 1978-84 price cycle: increase: fourth quarter 1978 to fourth quarter 1980, decrease: first quarter 1981 to fourth quarter 1982, recovery: first quarter 1983 to second quarter 1984.

3/ "-" indicates a depreciation of the U.S. dollar.

sharply during all three phases of the 1978-84 price cycle; the particularly high price increase recorded during the 1983-84 recovery reflected the large exchange rate adjustments undertaken by a number of developing countries to restore external competitiveness that had been eroded by domestic inflation. The less pronounced, but still substantial, increase in commodity prices expressed in the currency basket of commodity-importing countries, also reflected similar exchange rate adjustments made by developing countries, as well as the depreciation of the currencies of other importing countries.

Part B of Table 4 presents the fluctuation of relative or "real" commodity prices, also in terms of three different measures. The first is derived by deflating nominal commodity prices by prices of manufactured exports; the second by deflating the nominal commodity prices expressed in the currencies of the exporting countries by their domestic price levels; and the third, by deflating the nominal commodity prices expressed in the currencies of the importing countries by their domestic price levels.

All three measures of real prices confirm the existence of the two cycles (1972-77 and 1978-84) shown by reference to nominal prices. Unlike the large differences that characterized the movements of nominal prices, however, all three measures of real prices appear to have moved in fairly similar patterns through the successive phases of the cycles, except during the 1983-84 recovery. As a consequence of substantial adjustments of real exchange rates undertaken by a number of developing countries, the recovery of real prices during 1983-84, measured in terms of the currency basket of the exporting countries, was substantially greater than the recovery expressed in terms of the other two measures.

The substantially greater increases in nominal than in real prices during both the 1972-77 cycle and the initial phase (1978-80) of the 1978-84 cycle reflected the high rate of world inflation in those years; much of the increase in nominal commodity prices was eroded during 1972-80 by increases in the dollar prices of manufactures and in the domestic prices of the countries exporting and importing primary commodities. During the 1981-82 recession and the subsequent recovery in 1983-84, inflation in exporting countries, and to a lesser extent in importing countries, continued, but the dollar prices of manufactures declined largely as a result of the appreciation of the dollar. While the decline in real commodity prices measured by use of manufactured prices in 1981-82 was smaller than in nominal dollar terms, the subsequent recovery of real prices was somewhat larger than that of nominal prices.

By mid-1984, real commodity prices, in terms of all the measures used, had recovered roughly to their 1979-81 averages; the real prices derived by using domestic price levels of exporting countries attained levels somewhat exceeding the 1979-81 averages. However, the large and prolonged erosion of the real commodity prices experienced by the

exporting countries during the 1981-82 world recession is noteworthy. 1/ Statistical evidence suggests a significant impact of changes in real commodity prices--and the consequential changes in the profitability of commodity production--on the world's aggregate potential output of primary commodities roughly 5-7 years later. Therefore, the erosion of the real commodity prices during 1981-82 should have a restraining influence on supplies of commodities during the second half of the 1980s, thus tending to put upward pressure on prices.

Although the various measures of real commodity prices are independent of the particular currency unit in which they are measured, they are not necessarily independent of the fluctuations of the exchange rates of major currencies. The remainder of this section analyzes whether changes in the nominal U.S. dollar exchange rates affect the first measure of real commodity prices, i.e., nominal commodity prices relative to nominal manufactures prices.

The direct channel through which a change in the U.S. dollar exchange rate is transmitted to the dollar prices of internationally traded goods (whether primary commodities or manufactures) is through its effect on the relative prices of these goods vis-a-vis domestically produced goods in exporting and importing countries. To the extent that the prices of domestic goods are not affected by exchange rate changes, an appreciation of the U.S. dollar vis-a-vis the currencies of other industrial countries would increase the prices of foreign goods, relative to domestic goods, for countries other than the United States. As a consequence, in countries other than the United States, for given dollar prices of internationally traded goods, import demand would diminish, export supply would increase, and the dollar prices of internationally traded goods would tend to fall. 2/ Because of arbitrage, prices both for individual primary commodities and for individual manufactures entering international trade would tend to equalize in various markets, although the process of equalization is likely to take place more quickly for homogeneous products, such as most primary commodities, than it is for differentiated manufactured goods.

The extent of the decline in the dollar prices of traded goods induced by an appreciation of the dollar would be influenced by the share of the United States in world trade and production of the goods concerned; the larger the U.S. share, other things being equal, the smaller the decline

---

1/ The erosion of real prices during 1981-82 was spread over a longer period than the erosion in 1974-75 but was less sharp.

2/ Any decline in U.S. domestic price level resulting from the appreciation of the U.S. dollar would be expected to have a positive effect on U.S. export supply and a negative effect on U.S. import demand; these effects would therefore tend to reduce the dollar prices of traded goods, thus reinforcing the initial effect of the U.S. dollar appreciation.

in dollar prices. 1/ The U.S. share in the world trade of primary commodities, in addition to being fairly small, does not differ significantly from that of manufactures (Table 5). These shares suggest that any difference in the impact of the U.S. dollar exchange rate changes on the prices of commodities and on the prices of manufactured exports, and hence on the "real" prices of commodities, should be a consequence of factors other than these market shares. 2/

One such factor may be attributable to the use of export unit values, which reflects contract prices, as the measure of manufactured prices, whereas spot market prices are used to measure the prices of primary commodities. Market prices of commodities may be expected to react quickly to changes in the exchange rate of the U.S. dollar. In contrast, the speed with which the dollar prices of manufactures reflect changes in the U.S. dollar exchange rates would depend on the rapidity with which contract prices, in whatever currencies they are invoiced, adjust to new equilibrium prices and the share of contracts invoiced in U.S. dollars in total trade. Manufactured exports are generally invoiced in the currencies of exporting countries. This practice, together with the fact that the share of the United States in total exports of manufactures is relatively low, suggests that, even if contract prices were rigid, the response of the dollar unit values of manufactures to changes in the U.S. dollar exchange rate would be fairly rapid.

Two approaches are used to assess the impact of changes in the exchange rate of the U.S. dollar in recent years on real commodity prices. First, the effects of exchange rate changes on nominal commodity prices are compared with their effects on the prices of manufactured exports. Second, the effects of changes in exchange rate on real commodity prices are examined directly.

1/ For goods, such as primary commodities, with a low price elasticity of supply in the short run, the immediate effect would be to reduce the dollar prices of imports of countries other than the United States. For goods, such as manufactures, for which supply may be characterized as elastic, the immediate effect would be to reduce the dollar prices of exports by countries other than the United States. The U.S. share in the world imports of primary commodities of 12 percent in 1979-81 was close to the U.S. share in world exports of manufactures of 14 percent (Table 5).

2/ If it is assumed that the currencies of developing countries are pegged to the U.S. dollar, the overall decline in the prices of primary commodities induced by an appreciation of the dollar against other major currencies would depend, in part, on the combined share of the United States and developing countries in world trade. In general, the effect of changes in the U.S. dollar exchange rate vis-a-vis the currencies of other industrial countries would depend, inter alia, on the trade shares of countries grouped in accordance with the change in their currencies vis-a-vis the U.S. dollar and on the relevant supply and demand elasticities with respect to price.

Table 5. Non-Oil Primary Commodities and Manufactures: The Structure of World Trade 1/

(1979-81 average)

	Non-Oil Primary Commodities		Manufactures	
	Imports	Exports	Imports	Exports
	(In percent)			
World	100	100	100	100
Industrial countries	79	68	74	87
United States	(12)	(19)	(14)	(14)
Other	(67)	(49)	(60)	(73)
Developing countries	21	32	26	13
Non-oil	(16)	(29)	(19)	(12)
Oil	(5)	(3)	(7)	(1)

1/ Based on the United Nations D-Statistics Series. Some processed primary commodities such as copper, tin, aluminum and coffee concentrates, etc., are regarded as primary commodities, while all the other processed or semi-processed goods are regarded as manufactures.

Based on an econometric analysis of quarterly data covering the period from the early 1970s to the early 1980s, the elasticity of dollar prices of primary commodities with respect to the exchange rate of the U.S. dollar vis-a-vis other major currencies is estimated roughly at -0.75. 1/ The study found no evidence of a lag in the transmission of a change in the dollar exchange rate to commodity prices. The study also found strong responses in the dollar prices of commodities related to movements in economic activity and domestic prices of industrial countries.

An econometric study of the determinants of the average unit values of industrial countries' exports of manufactures, also based on quarterly data from early 1970s to the early 1980s, suggests strong and fairly speedy transmission of exchange rate changes to the unit values of manufactures. The results indicate that an appreciation of the U.S. dollar by 10 percent in a given quarter vis-a-vis other major currencies reduces the unit values by somewhat less than 7.5 percent during the same quarter, and by close to 7.5 percent within a year. In addition, a strong impact of domestic inflation in industrial countries on the unit values of manufactures is found, while the impact of economic activity does not appear to be significant.

These analyses suggest that any impact on real commodity prices resulting from a change in the U.S. dollar exchange rate is rather weak. An appreciation of the dollar in any quarter would reduce real commodity prices somewhat in the same quarter; real prices, however, would increase to close to the original level within a year. This result implies that any deterioration of the terms of trade of primary exporting countries induced by an appreciation of the dollar would be small and temporary.

Further evidence that any effect on real commodity prices resulting from changes in the U.S. dollar exchange rate is small is given by the results of an econometric analysis which seeks to establish directly the relationship between real prices on the one hand and the U.S. dollar exchange rate and industrial countries' economic activity and inflation on the other. While confirming earlier findings regarding the strong positive impact of economic activity on real commodity prices, the analysis does not suggest any statistically significant impact for changes in the U.S. dollar exchange rate.

It should be noted that the results of the above analyses deal only with the effect of the changes in the nominal U.S. dollar exchange rates on commodity prices. The effects of real exchange rates (i.e., nominal exchange rates multiplied by the price levels in the United States relative to those abroad) could be different. For example, an appreciation of the U.S. dollar in real terms could result not only from an appreciation of nominal exchange rates, but also from an increase in

---

1/ The analysis, which was reported in previous issues of the World Economic Outlook, was based on the change in the U.S. dollar exchange rate against a basket of major currencies including the U.S. dollar.

U.S. domestic price levels or a decrease in foreign price levels. An appreciation of the real U.S. dollar exchange rate resulting from a rise in the U.S. domestic price levels would tend to increase, not decrease, the dollar prices of internationally traded goods. Moreover, the study does not examine any impact that changes in the U.S. dollar exchange rates might have had on the aggregate money supply in industrial countries and, in turn, the consequent effects of changes in economic activity in those countries on the movement of real commodity prices. In addition, pressure on real commodity prices could also come from changes in the exchange rates of developing countries and factors such as commodity supply shocks.

Outlook for commodity prices

The underlying assumptions used in the present WEO exercise concerning the likely movements in demand and supply factors that influence commodity prices result in the projection of small decreases in the U.S. dollar index of commodity prices in 1985, modest increases in 1986 and somewhat larger annual increases in the period 1987-90.

In the near term, the deceleration in the rate of increase in aggregate economic activity in industrial countries is expected to continue, with growth in real GNP forecast to decline from 5 percent in 1984 to 3 percent in 1985, and to be marginally lower in 1986. In addition, inflation in the industrial countries is expected to decline marginally in both 1985 and 1986. Although lower than in 1984, real interest rates are expected to remain at high levels by historical standards. The exchange rate of the U.S. dollar vis-a-vis other major currencies during 1985 and 1986 is assumed to remain at its 1984 year-end level, implying a 5 percent appreciation, year-average on year-average, in 1985 and no change in 1986. The effects of the large 1984 harvests of agricultural commodities will be felt on the prices of these commodities at least through the first half of 1985 while the likely return of production to more usual levels in 1985 may permit an increase in prices of agricultural commodities in the later part of 1985 and in 1986. Prices of metals, starting from a depressed base, are expected to increase in both years as a result of the significant drawdowns in stocks in 1984, which are expected to continue in 1985, and of the continuing, albeit slow, increase in demand.

Taking all the above factors into account, in 1985 overall commodity prices are projected to fall by 2 percent in terms of U.S. dollars as compared with the increase of 2 percent recorded in 1984. The difference in the two years is largely explained by the change in the exchange rate of the U.S. dollar, as the effects of changes in the other above-mentioned variables tend to offset each other. For example, slower growth in industrial countries in 1985 is expected to be offset by the effect of the reduced overhang of stocks of metals. Neither the marginal decrease projected in inflation, nor the marginal decrease in real interest rates is expected to appreciably affect commodity prices. The larger supplies of agricultural commodities in the latter part of 1984 and the first part

of 1985 balance the smaller supplies realized in the early part of 1984 and anticipated in the latter part of 1985. Partly as a result of this last factor, the overall price index is projected to increase in the second half of 1985 by 7 percent over the level for the first half of the year, although still being 3 percent below its level in the first half of 1984. In 1986, the supply-side adjustments for both agricultural commodities and metals are expected to continue with the result that the annual average increase in the overall price index is projected at 5 percent.

The changes projected for commodity prices in 1985 and 1986 are roughly in line with the changes expected in the prices of manufactured exports, with the decline in commodity prices in 1985 projected to be marginally greater than the decline in the prices of manufactured exports and the increase in 1985 also marginally greater. Therefore, no major changes in the real commodity prices are projected over the two years taken together. These projections, together with the projections for petroleum 1/ would result in a slight deterioration in the terms of trade of the non-oil developing countries in 1985 to be followed by a slight improvement in 1986. The terms of trade of these countries in 1986, therefore, would be about 2 percent above the low reached in 1982, but still some 10 percent below the level that prevailed in the period 1976-78.

In the medium term period 1987-90, commodity prices expressed in U.S. dollars are projected to increase at an average annual rate of about 8 percent using the baseline scenario. It is assumed that output in industrial countries will grow at 3.1 percent, marginally faster than the average of 1985 and 1986 but considerably slower than in 1984. Inflation in these countries has been projected at the same level as in 1986 with an assumed rate of increase in the GNP deflator of nearly 4 percent. Real interest rates are projected to remain at relatively high levels, although declining from 5.0 percent in 1986 to 3.5 percent in 1990. A slow but progressive depreciation of the U.S. dollar is projected in the period 1979-90. The real effective U.S. dollar exchange rate vis-a-vis other major currencies is assumed to decrease at a rate of 5 percent per annum.

The greater part of the increases in commodity prices projected for the medium-term period beginning 1987 would be the result of the depreciation assumed for the U.S. dollar. The remainder could largely be explained in terms of a delayed impact of the sharp fall in commodity prices in the early 1980s on existing productive capacity and on new investment in the production of commodities. On the basis of the assumptions in this scenario, price increases for manufactured exports are expected to be broadly in line with those for primary commodities so that no major changes in real commodity prices are projected for this period.

1/ See "World Economic Outlook: Supplementary Note 4--World Oil Situation" (SM/85/73, 3/11/85).

Export earnings and use of Fund special facilities

The small increase in nominal commodity prices on average in 1984, combined with declines in the prices of petroleum and manufactures, contributed to a slight increase (1 percent) in the terms of trade of the non-oil developing countries. Although the average unit value of exports by these countries declined marginally in terms of U.S. dollars, their export earnings increased by 11 percent as a result of a 12 percent rise in export volume. As imports increased by only 6 percent, the deficit on the trade balance declined from US$23 billion in 1983 to only US$6 billion in 1984, and the current account deficit fell from US$52 billion to US$38 billion.

As a result of higher export earnings together with decreased inflationary expectations with regard to commodity prices and the fact that CF purchases by a number of countries had already reached or were close to the quota limit, fewer members met the conditions for use of the Fund's compensatory financing facility in 1984 than in the years from 1981 to 1983. Total purchases in 1984 were only SDR 0.8 billion compared with SDR 2.8 billion in 1983. Purchases in 1984 were matched by repurchases in respect of previous purchases with the result that the total outstanding purchases under the facility at the end of the year, SDR 7.5 billion, was the same as at the beginning of the year. Although the number and level of purchases in 1985 are expected to increase somewhat, they are likely to be closer to those in 1984 than in the period 1981-83. There may be some increase in the use of the facility to cover the excess in cereal import costs in 1984/85 as a number of countries are facing heavy import bills on account of adverse weather conditions affecting domestic cereal production. Total repurchases under the facility in 1985 will increase as the relatively large purchases made in 1981 become due. Total repurchases in 1986 and 1987, however, will be approximately twice those in 1985, reflecting the scheduled repurchases of the large purchases made in 1982 and 1983.

The Fund's buffer stock financing facility has assisted Fund members in recent years in connection with their contributions to the operation of the buffer stocks of the natural rubber, sugar and tin agreements. During 1984 only one small purchase was made under this facility, by a sugar exporting country in connection with an obligation to constitute special stocks under the 1977 Sugar Agreement. With the expiration of the 1977 International Sugar Agreement at the end of 1984, sugar exporting countries were free to release the special stocks of sugar accumulated under the provisions of that Agreement. As a consequence, the six members with outstanding purchases totaling SDR 95 million are expected to repurchase the outstanding amounts early in 1985. The outstanding purchases with respect to the other two agreements totaled SDR 266 million at the beginning of 1985.